

Marine Life Protection Act Initiative



Draft Size and Spacing Evaluations of the Round 1 Draft MPA Arrays/Proposals for the MLPA South Coast Study Region

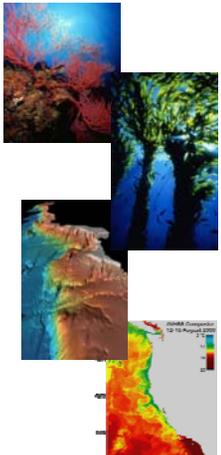
Presentation to the MLPA South Coast Regional Stakeholder Group
April 28, 2009 • Oxnard, CA

Presented by Dr. Larry Allen, MLPA Master Plan Science Advisory Team

MLPA Goals*

1. To protect the natural diversity and function of **marine ecosystems**.
2. To help sustain and restore **marine life populations**.
3. To improve **recreational, educational, and study opportunities** in areas with minimal human disturbance.
4. To protect representative and unique **marine life habitats**.
5. Clear objectives, effective management, adequate enforcement, sound science.
6. To ensure that MPAs are designed and managed as a **network**.

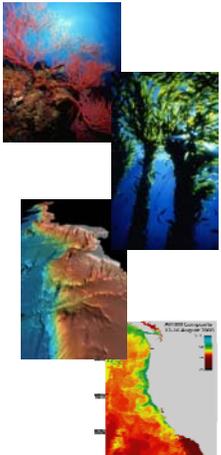
* Note that this language is a paraphrasing of the MLPA goals



MLPA Goals*: Populations

1. To protect the natural diversity and function of **marine ecosystems**.
2. To help sustain and restore **marine life populations**.
3. To improve **recreational, educational, and study opportunities** in areas with minimal human disturbance.
4. To protect representative and unique **marine life habitats**.
5. Clear objectives, effective management, adequate enforcement, sound science.
6. To ensure that MPAs are designed and managed as a **network**.

* Note that this language is a paraphrasing of the MLPA goals



Protecting Populations (Goals 2 & 6)

Size and Spacing

- Marine protected areas (MPAs) should be large enough that adults don't move out of them too frequently and become vulnerable to fishing
- MPAs should be close enough together that sufficient larvae can move from one to the next



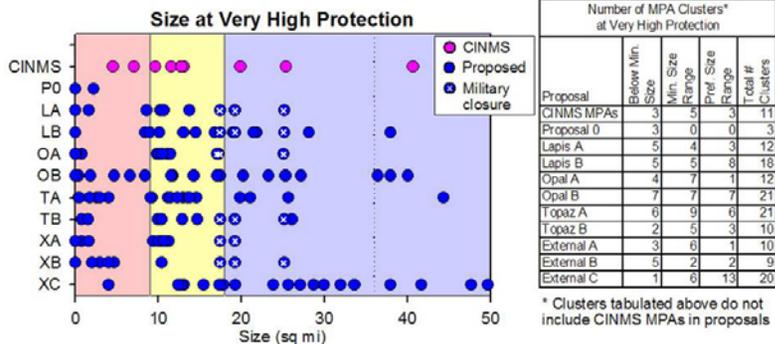
Size Guidelines

- MPAs should have an alongshore span of 5-10 kilometers (3-6 miles) of coastline, and preferably 10-20 kilometers (6-12.5 miles) to protect adult populations, based on adult neighborhood sizes and movement patterns. Larger MPAs should be required to fully protect marine birds, mammals, and migratory fish.
- MPAs should extend from the intertidal zone to deep waters offshore to protect the diversity of species that live at different depths and to accommodate the ontogenetic movement of individuals to and from nursery or spawning grounds to adult habitats.
- Combined and simplified, these two guidelines yield:
Minimum range of 9-18 square miles
Preferred range of 18-36 square miles

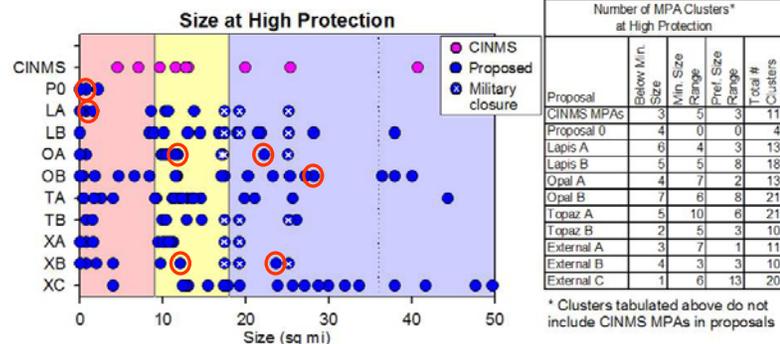
Size Analysis Methods

- Measure individual MPA areas
- Combine contiguous MPAs into MPA clusters
- Consider level of protection
- Tabulate MPA cluster areas relative to minimum and preferred guidelines
- Estuarine MPAs are not included in size evaluation

Cluster Sizes: Very High Protection

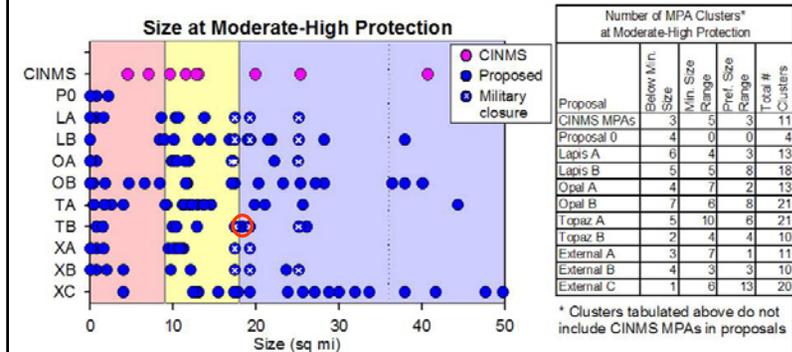


Cluster Sizes: High Protection*



* Evaluated for all MPAs at or above high protection

Cluster Sizes: Mod-high Protection*



* Evaluated for all MPAs at or above mod-high protection

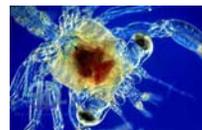
Size: Conclusions

- The number & size of MPAs varies markedly across arrays
- All proposals have 3-9 SMRs within minimum size range
- All proposals except External A have SMRs within the preferred size range, but numbers vary greatly (from 1 in Opal A and External B, to 13 in External C)
- All proposals have some MPAs that do not meet minimum size guidelines
- Most MPAs in this analysis are SMRs; few SMCAs achieved high or mod-high protection across all arrays
- Only effect of updated habitat data has been to move one military MPA from minimum to preferred size range

Protecting Populations

Size and Spacing

- MPAs should be large enough that adults don't move out of them too frequently and become vulnerable to fishing
- MPAs should be close enough together that sufficient larvae can move from one to the next



Design Guidelines: Goals 2 and 6

- MPAs should be placed within 50-100 kilometers (31-62 miles) of each other** to facilitate dispersal and connectedness of important bottom-dwelling fish and invertebrate groups among MPAs
- Because many populations are habitat-specific, spacing is evaluated for each habitat

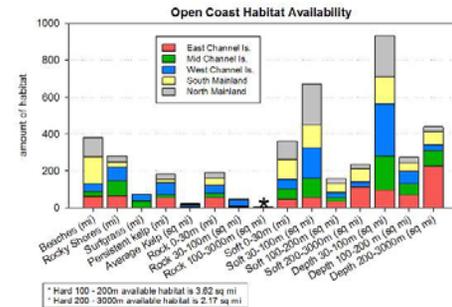
Spacing Analysis Methods

- MPAs or clusters must meet the minimum size guidelines (9 square miles) to be included in the spacing analysis
- Identify the habitats included in sufficient amounts to count as a “replicate” within each MPA cluster
- Measure gaps between adjacent MPA clusters that contain a given habitat
- Spacing is calculated for mainland MPAs only

Habitat Availability and Spacing

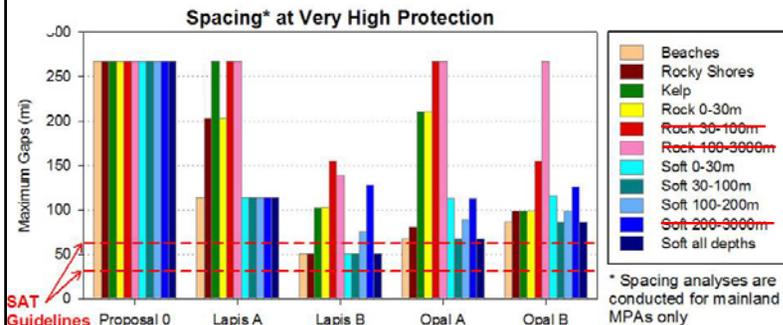
Habitat availability and distribution limits spacing

- >30 meter rocky habitats are rare on the mainland
- >200 meter soft bottom on the mainland occurs mostly in canyons
- Surfgrass is not mapped on the mainland so not evaluated for spacing



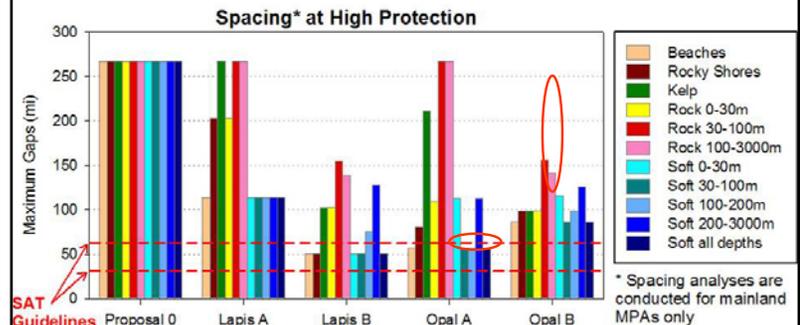
Max Gaps: Very High Protection

First 4 of 9 arrays/proposals



Likely not possible to meet spacing guidelines for >30 meter rock or >200 meter soft habitats

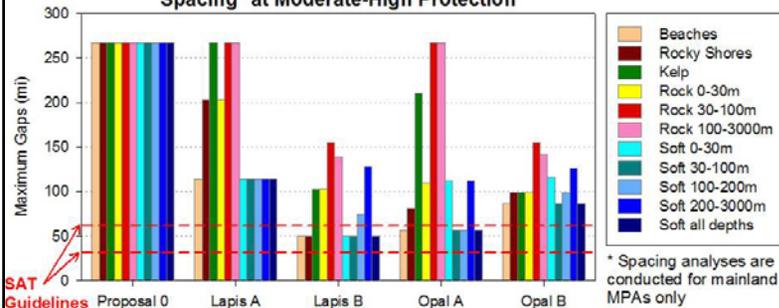
Max Gaps: High Protection



High protection MPAs contribute to spacing in Opal A and Opal B.

Max Gaps: Mod-high Protection

Spacing* at Moderate-High Protection

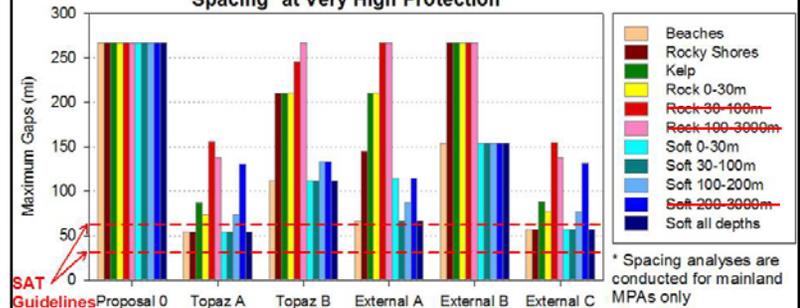


Mod-high protection MPAs do not contribute to spacing for any of these arrays.

Max Gaps: Very High Protection

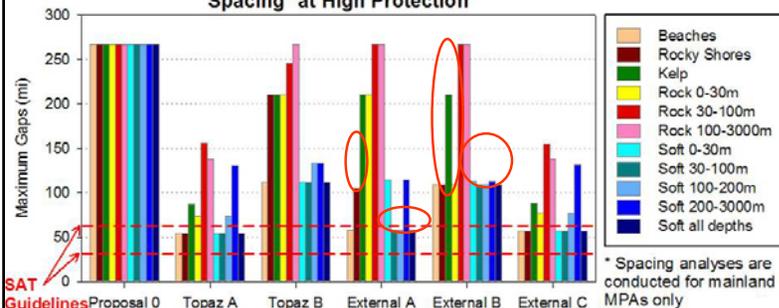
Next 5 of 9 arrays/proposals

Spacing* at Very High Protection



Max Gaps: High Protection

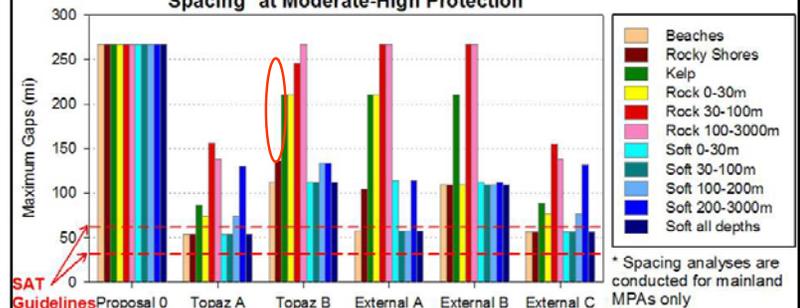
Spacing* at High Protection



High protection MPAs contribute to spacing in External A and External B.

Max Gaps: Mod-high Protection

Spacing* at Moderate-High Protection



Mod-high protection MPAs contribute to spacing in Topaz B.



Spacing: Conclusions

-  Spacing guidelines may be impossible to meet for some habitats
-  No proposal meets spacing guidelines for all possible habitats
-  Gaps between rocky habitats are generally larger than between soft habitats even where guidelines are achievable
-  Lapis B, Topaz A, and External C come closest to meeting spacing guidelines
-  Updated habitat maps/layers had marginal effect on spacing evaluations